DOCUMENT RESUME

ED 145 271 08 CE 013 662

| | |
|---|---|
| TITLE | Transportation Management. A Major Occupational Group in the Public Service Cluster. Teacher's Manual. |
| INSTITUTION | Gwinnett County Schools, Ga. |
| SPONS AGENCY | Bureau of Occupational and Adult Education (DHEW/OE), Washington, D.C. |
| PUB DATE | [77] |
| GRANT | OEG-0-71-4781 |
| NOTE | 125p.; For related documents see CE 013 652-672 and CE 013 805 ; Not available in hard copy due to marginal reproducibility of colored paper |
| EDRS PRICE | MF-$0.83 Plus Postage. HC Not Available from EDRS. |
| DESCRIPTORS | Administrative Agencies; *Career Exploration; Curriculum Guides; Federal Government; Government (Administrative Body); High School Curriculum; *Learning Activities; *Management; *Occupational Information; *Public Service Occupations; Senior High Schools; *Transportation; Vocational Education |
| IDENTIFIERS | Applied Program of Public Service; Georgia |

ABSTRACT

Part of a course designed to acquaint high school students with basic information concerning careers in public service, this teacher's manual is one of nine (each with accompanying student guide) which constitute a course entitled "Orientation to Public Service." Focus in the units covered by the manual is on transportation management, one of eight major public service occupational groups covered in the course. Contents of the student guide are included: readings and related activities concerning introduction to transportation management, the major federal transportation agencies (Federal Aviation Administration, Federal Highway Administration, National Highway Traffic Safety Administration, and Federal Railroad Administration), and worker functions and duties for jobs available in the various job families: the airways, the highways, the railways. Additional teacher's pages are inserted for each unit. These contain lists of materials needed, purpose of the unit activities, notes on guidance, and suggested modifications or extensions of activities in the student guide. Answers to student self-check activities and other exercises are provided in the final section. (The accompanying student guide is CE 013 661. The total course is the first of a series of three developed as a comprehensive approach to vocational skill development in public service for Georgia high schools. Also available is a guide for the whole four-quarter program, Applied Program of Public Service, CE 013 652.) (JT)

Documents acquired by ERIC include many informal unpublished materials not available from other sources. ERIC makes every effort to obtain the best copy available. Nevertheless, items of marginal reproducibility are often encountered and this affects the quality of the microfiche and hardcopy reproductions ERIC makes available via the ERIC Document Reproduction Service (EDRS). EDRS is not responsible for the quality of the original document. Reproductions supplied by EDRS are the best that can be made from the original.

CE013662

ED145271

# TRANSPORTATION MANAGEMENT

## A MAJOR OCCUPATIONAL GROUP IN THE PUBLIC SERVICE CLUSTER

**TEACHERS MANUAL**

- Introduction to Transportation Management
- Federal Transportation Management Agencies
- Worker Functions and Duties

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

A Unit in the Public Services Cluster
Applied Program of Public Service
Gwinnett County Schools
Franklin Lewis, Principal, Project Director
Daniel Cowart, Project Coordinator
Melinda Skiles, Project Implementor

## ACKNOWLEDGEMENTS

The APPS staff owes a debt of gratitude to the United States Office of Education and the California Board of Education (Grant OEG-0-71-4781) which developed some original public service materials. Some of the content materials developed for teacher use in the above mentioned project, have been adapted for direct student use.

In addition, the following people and organizations directly contributed to the development of these materials.

| | |
|---|---|
| Paul Scott<br>Bettye Hirst<br>Mary Harville | State Project Managers |
| J. W. Benefield | Superintendent, Gwinnett County Schools |
| Franklin Lewis | Principal, North Gwinnett High School |
| Charles Mantooth<br>Marion Scott | Directors, Gwinnett County Vocational Education |
| Melinda Skiles | Project Implementor |
| Charles Hill | Formative and Product Evaluation |
| Alice Hibbard<br>Patricia Brooks | Editing |
| Mary Allison | Curriculum Writer |
| Denise McDaniel<br>Anita Duncan | VOT Students, North Gwinnett High School |
| Metropolitan Cooperative Educational Service Agency<br>Ernest Bentley, Ex. Dir.<br>Michael Christian<br>Frederick S. Kopp | For their contribution in program conceptualization and formative writing. |
| Lucious Baldwin<br>Anita Cole<br>Kathy Farrell<br>Lamar Fraser<br>Gary Stewart<br>Robert Hart<br>Grace Hyland<br>Mary Janice Luzier<br>Neil Nichols<br>Gwendolyn Gantt | Contributing Writers |
| Mary Haygood | Compositon, layout and design |
| Joy Phillips | Graphics and Design |

## FOREWORD

This "Orientation to Public Service" series is one of a set of nine student centered books designed to acquaint high school students with basic information concerning careers in public service. Each book addresses itself to either a major occupational group in public service or an important supplemental area of study necessary to the understanding of public service. In addition to the student centered materials found in this book, a teacher's guide outlining how this book can be used in a course setting has been developed for the potential user.

The "Orientation to Public Service" course is the first in a series of three courses developed as a comprehensive approach to vocational skill development in Public Service for Georgia High Schools. While materials in this course are valuable to the student without benefit of the remaining two courses in the series, a student would normally enroll in "Preparing for Public Service" and the "Public Service Community Skill Development Program" subsequent to the Orientation course.

As with all curriculum materials and guides, the information contained here is a beginning point. In order for this course to effectively meet the needs of each individual student, the user must adapt to local and individual student needs. As such, I make a strong recommendation that extensive use of the curriculum guides be used with the materials. Included in these guides is a wide range of suggestions for helping these materials meet the local classroom teacher's needs.

This material was prepared by the "Applied Program of Public Service" under a direct grant to Gwinnett County Schools from the Georgia State Department Office for Adult and Vocational Education (OAVE). OAVE is presently under the direction of Dr. Russell Clark, Assistant Superintendent for Adult and Vocational Education Programs.

In the development of these materials special consideration should go to Mrs. Melinda Skiles. Her tireless efforts in evaluating these materials for their useability by the classroom student, have been invaluable.

Daniel L. Cowart

Project Coordinator and Operations Director

## OVERVIEW

This booklet contains several units of reading and related activities. The reading details some specific aspects of the major occupational groups. The activities have been designed to provide the student with opportunities to further explore the objectives of the reading. The activities vary in length and complexity.

Before any student begins work in a booklet, the teacher should become thoroughly familiar with the contents. Some activities may take several days to complete. The teacher should help the student budget his or her time accordingly. Some activities may call for a resource person, a field trip or an on-site interview. The teacher will need to be aware of these activities and schedule for them early enough so that the student can complete the activities within the suggested time frame as outlined in the Implementation Guide.

The section orientation page (Where Am I Going? How Will I Get There? How Will I Know? . . .) is intended to serve as an organizer for the student. It should help focus the student's thinking and prepare him or her for the reading and activities to come. An orientation page appears for each section for all booklets in this series.

This booklet has been designed so that students can work on many of the activities independently with appropriate monitoring and guidance from the teacher. It is most important to remember, however, that these booklets are not workbooks and should not be passed out at the first of the period, worked in, and then collected to be checked later. No material or set of activities can replace the importance of a creative, enthusiastic and well prepared teacher. Teacher preparation is essential to effective and successful use of these booklets. Not only should all materials and resources be organized, but the teacher should be alert to supplemental materials available through newspaper stories, carefully chosen commercial games and books.

As a continuing activity for all MOG's, students can develop bulletin boards and other public relations type of displays for the classroom and the school. The classroom should reflect the activities of the students. Make liberal use of student photographs, brochures, and posters to display various aspects of careers in public service. As students see the involvement of their peers in these jobs, they will be encouraged to participate in the program. A useful technique borrowed from the elementary school is to set up learning centers around the room which give new students a chance to "sample" a MOG through an entertaining activity, photographs, brochures or even a taped discussion with a resource person. These learning centers should rotate and change as new information is brought in and as student

involvement in the careers changes. Planning, motivating, and monitoring are the keys to success in the Applied Program of Public Service.

For your information, answers to self-check activities and other activities which require specific answers have been provided in the last section of this booklet. It will be necessary to develop answer sheets for your file in order for students to have access to them.

## TRANSPORTATION MANAGEMENT

### Introduction

The Department of Transportation is one of the smaller of the executive departments. In spite of its size, this department, which was established in 1966, is concerned with a very vital part of American life. One dollar out of every seven spent in the United State is for some form of transportation. This fact and others relating to transportation can be found in encyclopedias and general social studies texts. They are a ready source of additional information for this MOG which is readily understood. The reading in this section deals with major job families. There are other aspects of Transportation Management not addressed by this MOG. For example, service and support jobs are not described. The student will have a chance to learn other things through activities, site visits, additional reading, and audio visual materials.

Transportation has recently become a focus of energy conservation programs. The media presents day-to-day reports of areas of concern and measures being proposed. Students should be alerted to the changes occurring in this field.

## TRANSPORTATION MANAGEMENT

### Introduction

Congestion has become a major problem on our roads and around many airports. It has been estimated that the number of highways will have to double between 1970 and 1980 to make it possible to continue travel if cars and trucks are produced and sold at the present rate of about 10 million a year. These concerns are handled by agencies and workers in transportation management.

Transportation Management is an interesting and expanding area of employment. Such managers are necessary to see that people and cargo move about our cities, states, country, and world in an orderly, efficient, and convenient manner. States, cities and countries receive funding (money) from the Federal Department of Transportation.

### WHERE AM I GOING?

By the time I complete this introduction and its activities, I will be familiar with the basic purposes of Transportation Management. You will be able to identify the three major job families and should have a good idea about the kinds of problems that may be facing workers in Transportation Management job families.

### HOW WILL I GET THERE?

1. Read the section that follows.
2. View a filmstrip on Transportation Management.
3. Think of Transportation Management problems and solutions.

### HOW WILL I KNOW . . .

I will successfully complete the Self Check Activity.

I will answer a set of questions.

I will complete the Problems and Solutions Activity.

## INTRODUCTION TO TRANSPORTATION MANAGEMENT

When we hear the word "transportation", our first thought is usually a car, a truck, a plane, a boat, or a train. These are the major ways we move from place to place. Transportation Management sees that we are able to travel in the safest, fastest way possible. In addition to offering advice and guidelines, transportation officials provide exact regulations that must be med by organizations and companies involved in the transportation business.

Records show that commercial companies drove, flew, or sailed over 1 trillion miles last year. This is equal to about 875,000 trips to the moon, and does not include the miles we drive in our cars, motorcycles, and pick-up trucks. Transportation is important to all of us; therefore, the men and women who work in the field provide a great service to the American people.

### Transportation Managers

Specifically, transportation managers develop plans that provide fast, safe, and convenient transportation to the public as efficiently as possible (like rapid transit systems). They make sure that transportation programs are administered fairly. They also help private companies by offering guidance and rules concerning transportation. Programs are developed to encourage state, federal, and local agencies to work together in providing good transportation. Studies and research are conducted to keep up with technological advances in transportation. Transportation managers sometimes also recommend legislation to Congress that will help in the safe transportation of people and products.

Among other things, the transportation manager must be able to look into the future. If he or she does not, the plan the manager prepares today will be out of date and old fashioned by the time it is completed. That is why stories you read about moving sidewalks, individual flying machines, helicopters, and high-speed subways are not sscIene fiction.

In the past, transportation officials have been primarily concerned with national problems. They can no longer do this. Today over 75% of our population lives in the cities. City officials are asking for help not only in the area of moving from place to place, but also in the fields of air pollution, noise, traffic congestion, destruction of neighborhoods by freeways, poor transportation for the underprivileged, the aged and the handicapped, and improved safety. If you worked in the area of Transportation Management you would help solve these problems facing the nation today. This is a problem that can not be pushed off until tomorrow. Solutions must begin today and you can be a part of the solution.

If you think you are interested in the transportation field, it isn't really important whether you'd rather work with planes, railroads, trucks, ships, or cars, since in today's transportation world all of these work together in seeing that products and people are moved from place to place. The mode of transportation is not as important as getting into the field good, creative people who have the ability to see not only the problems that exist now but the problems that might exist in the future. The problems that exist in transportation today can be applied to future forms of transportation as well.

**Transportation Systems and Management Job Families**

The transportation systems most of us know best are truck lines, steamship lines, airlines, railroad lines, and pipelines (Did you know that pipelines are considered to be a major form of land transportation. Of course, pipelines transport raw material (gas, oil) but without them we would be without much of our fuel. No place in the United States is over 200 miles from a pipeline. There are many jobs associated with pipeline transportation. Contact the Department of Transportation, 400 7th Street, S.W., Washington, D. C., for information on pipeline transportation. The job families in transportation are airways, highways, and railroads. Waterways and public transit systems are sometimes also included in the job families.

Airways Job Family. A major airport provides employment for thousands of people with several hundred of these in airport administration, airport planning, design and operation, and air traffic control.

Control and other flight specialists jobs are examples of the many opportunities in this Major Occupational Group Job Family.

**Highways Job Family.** Roadway regulations include the regulating of loads, vehicles, drivers, and access routes. Planning and design, traffic control, rate regulation, and driver regulations are areas, therefore, that provide jobs in this family. A close working relationship with law enforcement agencies is essential.

**Railways Job Family.** Public Service personnel work in directing the operation of a large part of the rail passenger traffic. Rate setting, terminal and high speed passenger systems designs, control systems, and research and development on new tracks are examples of opportunity-creating jobs that need to be done.

## MULTIPLE TRANSPORTATION SYSTEMS

America is a nation on the move and people and goods are moved by several means. Some transportation companies have begun to provide shipper-to-receiver services by using more than one transportation system. Airlines are concerned with door-to-door delivery of people as well as of cargo. It is common to see trucks, trailers, and boxes loaded on railroad cars for movement to another city and then unloaded, connected to another truck, and delivered to the receiver. Ships are also designed for this type of cargo. These multiple transportation systems are called "intermodal systems".

As intermodal systems of transportation develop, jobs in one area of transportation management will be similar to jobs in other areas. Transportation managers will work with airways, highways, railroads, and waterways in areas such a data management, passenger management, environmental management, and systems planning services.

Sound interesting? Read the other resources provided and complete the activities. You are learning about a career with a future.

## SUGGESTIONS FOR THE TEACHER

| Activity 1 - p. 5 | |
|---|---|
| **Materials**<br><br>Students will need copies of the activity page in order to complete the self-check. An answer sheet listing scoring guides or criteria should be accessible to the students as they complete their responses. | **Purpose**<br><br>In this self-check students are given an opportunity to use information from the reading to formulate their own answers to questions relating to Transportation Management. |
| **Guidance**<br><br>The first two questions can be answered by student recall of the reading material as well as their own ideas based on the facts and ideas presented in the reading. Question three requires some application of knowledge and ideas to a particular situation. When checking student responses, be sure to include both factual and the more creative and reasonable responses in your criteria. | **Modifications or Extensions**<br><br>1. Small group discussions in which a group arrives at correct responses through consideration of all facts.<br><br>2. Oral responses for students unable to respond adequately in the written form. |

Do not write on this form.

**Objective:** I will complete this self check in order to check my understanding of the reading.

**Materials:** Answer the following questions in your own words. Write at least three sentences for each question.

**ACTIVITY**

1. Why is transportation management a growing career field? _____

_____

_____

2. Why is it necessary to have persons employed to management transportation? _____

_____

_____

3. What are some of the things a transportation manager might do in a city like Lawrenceville? _____

_____

_____

Do not write on this form.

Activity 2

**Objective:** I will view an introductory program in order to gain an orientation to the MOG.

**Materials:** Film on Careers in this MOG, filmstrip viewer.

## ACTIVITY

This activity is designed to help you learn some basic things about careers in this MOG.

1. Go the the resource table and select film/cassette set or sets which goes with this MOG.
2. After you have prepared the Auto-Vance for Viewing, read the Introduction to the Film/Cassette program which will be found in the inside pocket of each package.
3. View the Film/Cassette program.
4. Answer the questions for each Film/Cassette program. These questions are included in your workbook.
5. You may view the program as many times as you wish in order to answer the questions.

**How will I know I've done it correctly? . . . Take your completed answers to your teacher for review.**

## SUGGESTIONS FOR THE TEACHER

Activity 2 - p. 6

### Materials

1. Pathescope film Careers in Transportation
2. Sound filmstrip viewer
3. Copy of review questions must be on file for the student.

### Purpose

The purpose is to have the student view available information in Transportation Management. This particular film was selected for its complete coverage of the public service area.

### Guidance

Students readily view filmstrips in this particular series and they are generally well received. At times, however, the written question section is not as welcome. The student should be provided with immediate feed-back concerning their answers. Grading and returning the paper is a very simple procedure and should be augmented by some type of follow-up activity. (see modifications and extensions).

### Modifications or Extensions

1. The teacher may elect to show the film to a group who are all studying Resources Management at the same time.
2. The teacher can have the questions taped for D & H students (or simply as a change of pace). Students may also tape their answers.
3. Where possible the teacher should allow students to develop answers to questions in a group. At times the teacher should forego entirely written or individual responses and elicit answers from a group discussion.

## SUGGESTIONS FOR THE TEACHER

Activity 3 - p. 7

### Materials

You will need to have copies of the Problems and Solutions record sheet available for student use.

### Purpose

This open ended activity leads students to consider some problems in developing and operating transportation systems. Students are also required to consider some possible solutions to these problems.

### Guidance

Scoring criteria are provided for you as you check student responses. There are, of course, other possible answers. Be sure to use flexibility in judging answers to that student initiative, creativity, and knowledge are not stifled. After this activity is completed, you will want to discuss the costs involved with some of the solutions. For example, cutting through mountains and building bridges can be very costly. What are the costs involved in hauling certain raw materials and goods? Contact the State Office of the Department of Transportation for specific information on problems facing transportation.



### Modifications or Extensions

1. This activity can be conducted as a small group activity, with students brainstorming possible solutions and ranking them in order to come up with the best ideas.

Activity 3

Do not write on this form.

**Objective:** I will briefly examine some of the problems associated with transportation management so that I will have a basic understanding of some problems.

**Materials:** Problems and Solutions Record Sheet

## ACTIVITY

By the time you complete this activity you will be aware of some of the problems faced by transportation managers. In this activity you are using your "head" and your "common sense". There are many good answers possible.

There are 6 problem areas listed on the enclosed form. Under each are speaces for you to list some specific transportation problems in the area. The first one has been done for you as an example.

Beside the problem section is a section labeled "Solutions". On the lines provided you are to list a brief solution to each problem you choose to list.

## The Problem

1. Climate and Weather
   - a. Frozen ground _____
   - b. _____
   - c. _____

2. Distance and Geography
   - a. Expense of long distance hauling _____
   - b. _____
   - c. _____

3. Public Transportation
   - a. Personal vehicles clogging roads _____
   - b. _____
   - c. _____

4. Transportation and the Environment
   - a. Pollution from automobiles _____
   - b. _____
   - c. _____

5. Fuel
   - a. Shortages -- high prices, not enough gas _____
   - b. _____
   - c. _____

6. Safety

a. 55,000 persons killed annually _____ _____

b. _____ _____

c. _____ _____

Activity 4a

**Do not write on this form.**

**OPTIONAL EXTRA CREDIT ACTIVITY**

**Objective:** I will use available resources to research job titles.

**Materials:** Job Card Box — NOTE: If there is no job card for you job title, do the next activity.

## ACTIVITY

Before you begin this activity, read through the entire activity so you will know all the things you will be expected to do.

1. Select 2 job titles from your MOG to research.
2. Go to the job card box located on the resource table.
3. Locate the job card for the job you are studying.

---

Museum Aide

I. Dictionary of Occupational Titles
Pages _____

II. Occupational Outlook Handbook
Pages _____

III. Encyclopedia of Careers
Pages _____

Look up and read the material listed under each of the three large reference books located on the reference table. They will be listed on the card like this:

I. Dictionary of Occupational Titles
II. Occupational Outlook Handbook
III. Encyclopedia of Careers

Activity 4a - p.10

**Materials**

The student will need to have available the following materials in order to complete this activity: The Dictionary of Occupational Titles, The Occupational Outlook Handbook, The Encyclopedia of Careers, and the Job Card Box. (Activity 4b explains the preparation of job cards).

**Purpose**

The preparation and use of job cards has been designed as a research activity which uses available resources to find out about certain job titles.

**Guidance**

This is a rather lengthy activity. The information which students obtain from the various reference books and other media will be used to answer the questions on page 14 (activity 4c). The steps outlined in this activity guide the student through the process of researching job titles. Students should be instructed to have the job card questions available as they locate references. These questions will serve as an organizer and aid the research process. It will be helpful to the students to have blank paper on which to make notes as they read through the various materials.

**Modifications or Extensions**

1. Pair a poor reader, or a student experiencing difficulty in selecting and organizing material with a student who has strengths in these areas. See the section on peer-tutoring for suggestions.

If there is no listing for a particular reference book, that means that there was no reference made to the job in that book.

Now look in the Merit System reference books and locate the job title(s) you are studying.

The Merit System references are listed like this:

IV. Merit System
State

Job title _____ 28305 (reference number)

_____

There may not be a job title listing in each merit system directory (State and County) only the Merit systems listed on the job card are relevant to your job title.

When using the state of Georgia Merit System reference:

1. Look up the job title and note the number code for that job. Example: Museum aide 30712
2. Look up the number code in the number code notebook. This will give you the job description.

Locate the Audio-Visual material listed on the job card. View one film/cassette program and answer the questions (see activity No. ). Review the other material.

V. Audio-Visual

**EXTRA CREDIT**

Go to the library and find the books listed for your job title. Look over the books and select one to the checked out for further study (activity No. ).

VI. Card Catalog

Activity 4b

Do not write on this form.

**Objective:** To prepare job cards for the study of an occupation.

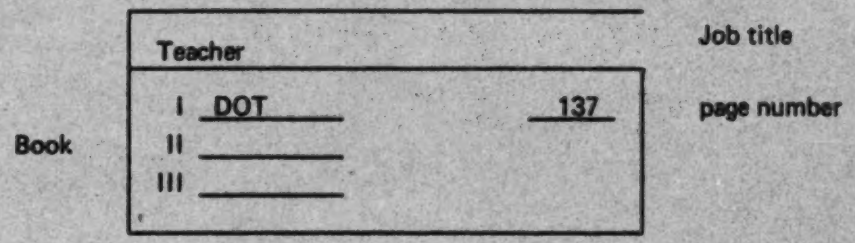
**Materials:** Blank job cards, the attached instruction sheet.

## ACTIVITY

This activity is to be done when there is no job card for your job title. Read through the entire activity so you will know all the things you are expected to do.

**Separate Instructions:**

1. If there is no job card for the job you are looking for you will need to make a job card.
2. Get some note cards from your teacher.
3. Look up your job title in the following books: 1. Dictionary of Occupational Titles 2. Occupational Outlook Handbook 3. Encyclopedia of Careers
4. Write on the note cards the job title and the pages the job title appears on in each book.




5. Look up your job title in the Merit System notebooks (Gwinnett County and DeKalb County are in folders).
6. List the title and the code number for the five (5) Merit Sources (all may not be listed).

44

45

Activity 4b - p. 12

**Materials**

When there are no researched job cards available for a particular title, the student will be required to prepare job cards. You will want to have plenty of blank job cards available. These are 3 x 5 index cards with the top line color coded to the MOG being studied. The Dictionary of Occupational Titles, The Occupational Outlook Handbook, The Encyclopedia of Careers, and any Audio Visual material available to your program should be placed in your resource file.

**Purpose**

Students complete this activity when there are no completed job cards for a particular job title. Job card research is an activity which gives students a chance to obtain specific information about jobs which they can't obtain from the MOG and related activities. The basic research and recording of information is a skill which will continue in importance as students continue school and work study experiences in Public Service.

**Guidance**

You will want to go over the instructions yourself for preparing job cards. This will enable you to answer student questions as they research their job titles and record the information. Be sure to inform the school librarian that students will be using the card catalog.

**Modifications or Extensions**

1. Pair a poor reader, or a student experiencing difficulty in selecting and organizing materials with a student who has strength in these areas. See the section on peer-tutoring for suggestions.

IV Merit System

GA 11362
Atlanta
Fulton
Gwinnett
DeKalb

7. Go to the APPS index file or Audio-Visual material. List the material (if any) relevant to your job family. Include films, filmstrips, cassettes, and tape recordings.

V AV Material

1. _____
2. _____
3. _____

8. Check the library card catalog and the APPS library. List the books and there library number on the card.

Working ED. 742

Activity 4c

Do not write on this form.

**Objective:** To answer questions relating to the job card research.

**Materials:** Questions

**ACTIVITY**

Now that you have investigated some job titles, you should be able to answer some questions. Use the information you acquired from the job cards to help you answer the questions. Answer one set of questions for each job title investigated.

**Job Card Questions**

1. Job title _____
2. Briefly describe what a worker with this job title does.
3. What are the educational requirements or training for this job?
4. What sorts of experience and skill would a worker with this job title require?
5. What is the general salary range for this job title.
6. Is this job title in a growing field, one that will provide many job opportunities? Yes ___ No ___
   Briefly explain your answer.
7. What high school courses (if any) would help you meet the requirements of this job title?
8. Do you think this job will be here ten years from now? Twenty years? What about in the year 2076?
   Briefly explain.
9. Would you like to have this job? Yes ___ No ___
   Briefly explain your answer.

**How will I know I've done it correctly? . . . I will have my teacher review my answers.**

## SUGGESTIONS FOR THE TEACHER

Activity 4c - p. 14

### Materials

The students do not write in the booklet. They will record the answers on a separate copy of the question set.

### Purpose

This set of questions is designed to pull together and reinforce some of the essential information pertaining to jobs. Questions 7, 8 and 9 give the student an opportunity to project his or her own attitudes and specific information into the answers.

### Guidance

This is not a self-check activity. Students should be allowed and encouraged to use the job card information to complete their answers. Be sure that the students answer one set of questions for each job title researched.

### Modifications or Extensions

1. Record the questions on tape, leaving sufficient time for the student response.

2. Allow students experiencing reading or other disabilities which make written question answering difficult to give their answers orally. Either the teacher or another student can record the oral responses.

## TRANSPORTATION MANAGEMENT

### Major Federal Transportation Agencies

Federal Transportation agencies are operating divisions of the Department of Transportation. These agencies are potential areas of employment. As such, it is important that students know something of the agencies functions. For the purposes of the APPS project, the Coast Guard was not included for study in the MOG. The Coast Guard does, however, come under the jurisdiction of the Department of Transportation. Should you have a particularly well motivated, interested student, you might encourage him/her to look into Coast Guard opportunities as part of an independent study.

## TRANSPORTATION MANAGEMENT

### Major Federal Transportation Agencies

Transportation Management is a large, complex field that is so important to the growth and operation of our country that several agencies or departments have been established to manage, organize, and lead the development of transportation. Better than 100,000 workers in more than thirty different government units were put under one administrative facility in the Department of Transportation (DOT). Some of the administrations have responsibilities in all major means (modes) of transportation.

**WHERE AM I GOING?**

The information and activities in this discussion of major federal transportation agencies will help me learn to identify the better known federal departments or agencies concerned with transportation management.

| HOW WILL I GET THERE? | HOW WILL I KNOW . . . BY |
|---|---|
| 1. Read the material on federal agencies contained in this section. | I will successfully complete the Self Check Activity. |
| 2. Look at the ways in which one agency influences local transportation management. | I will visit a local airport and complete activity. |

## MAJOR FEDERAL TRANSPORTATION AGENCIES

While watching the evening news you may have heard a broadcast like this:

> This morning immediately following take-off,a Johnson DC-10 crashed into the swamps of South Georgia. All 113 passengers were killed. An investigating team from the FAA is on the scene. At this time the cause of the crash is not known. We will bring you further details as they develop.

What is the FAA? What does it do? Investigating plane crashes is not its only function. Offically,the FAA is the Federal Aviation Administration, and it is one of many organizations under the Department of Transportation, a part of our federal government. The major duties of the FAA and other units of the Department of Transportation will be discussed to see if you might be interested in working for one of these agencies.

### The Federal Aviation Administration

As you have already seen,one of the 50,000 plus jobs with the Federal Aviation Administration is investigating accidents. This is only one of many jobs with the FAA. FAA employees' major function is air traffic control. They see that the airways stay clear and help avoid in-air collisions. Positions available are in air-traffic-control centers, airport control towers,and flight service stations. In addition,technical positions are available in maintaining radar and other flight and communication equipment.

The FAA is also responsible for certifying every pilot and every aircraft in the United States. In 1972 this involved monitoring the day-to-day activities of over 720,000 pilots and 133,000 aircraft.

FAA officials are involved with the development of all aricraft from the beginning. They must approve the original blueprints of an aircraft and then monitor all ground and flight tests. When these tests are all completed successfully they agency issues a certificate saying the plane has met all FAA standards. After this a production certificate is issued. This certificate means the company can start building more aircraft like the one approved; however, each and every aircarft built must earn its own individual certificate of airthworthiness.

Once these planes start flying, the FAA is concerned with operational safety. The men who work on the planes and repair the planes must all be certified by the FAA. Their work and qualifications are constantly being checked by FAA officials. Periodic checks are required on all aircraft and the FAA sees that this is done.

The development of new and improved airports is also a concern of the FAA. The FAA provides both money and assistance to help in the building of both public and private airports.

In recent years, hijacking has become a major problem of the airways. Today, in order to board a plane, an individual must walk through detection devices and allow his or her baggage and belongings to be searched. Special guards with special training are also employed to help stop air piracy. These and many other programs are developed by the FAA to increase security for air transportation.

If you are concerned about the environment and the pollution caused by air transportation, the FAA might be the place for you. The agency has already adopted regulations setting maximum noise limits for the new generation of aircraft. In addition, the FAA has started action to limit aircraft engine emission and is constantly working to help keep our country clean.

The FAA supports all of its work with extensive research. Flight safety in this jet age is a very demanding job and the problems already solved are only a start to the challenges that lie ahead.

**The Federal Highway Administration**

It's obvious great efforts are being made to keep the airways safe. What about the highways? Under our government, the primary responsibility for planning, designing, and operating our highways belongs to the state and local communities. Because of the national interest in highway improvement, the federal government, since 1916, has assisted the states through a cooperative road-building partnership.

Through the Federal Aid Highway Act of 1970, the FHWA (Federal Highway Administration) assists not only the building of interstate highways, but helps provide money to local government to construct major streets and highways needed to carry bus, truck, and auto traffic in our cities.

This act of 1970, in an attempt to help the economy, also authorizes a program to train the disadvantaged as skilled highway construction employees. The act reactivated the highway beautification program and placed new emphasis on billboard and junkyard control, and set environmental protection guidelines in order to keep our air clean and free from excess noise.

The FHWA and the states carry on continuous highway safety campaigns to engineer more safety into the highways in order to correct accident-prone locations, to replace potentially dangerous bridges, to improve highway lighting, and to develop innovations such as breakaway sign supports and lamp standards.

Just as the FAA is responsible for air safety, the FHWA is responsible for the safety performance of over 125,000 motor carriers engaged in interstate or foreign transportation. Workers in the field check on drivers' qualifications and their hours of service on the road. They make vehicle inspections and assist in the movement of dangerous cargoes. Those who work for the Federal Highway Administration must be able to look into the future and see future problems, as well as solving the problems that are here today.

**National Highway Traffic Safety Administration (NHTSA)**

While the Federal Highway Administration is responsible for the safety of the highway, another agency, the National Highway Traffic Safety Administration (NHTSA), is responsible for the safety of vehicles, drivers, passengers, and pedestrians. The major goal of NHTSA is very simple--reduce highway deaths and injuries.

The agency attempts to do this in four areas. One is through the Highway Safety Program standards. Certain standards are set up that are adopted by individual states and communities. These standards deal with such areas as motor vehicle inspection, driver education, alcohol measures, traffic codes and laws, and emergency medical services.

Another area is in the field of production. Certain standards are set up that all vehicles manufactured must meet. These cover such items as seat belts, collapsible steering columns, brakes, and tires.

The third area is public education. These are simple programs that help the people help themselves to stay alive. Finally, an extensive research program is conducted which enables the agency to form a basis for new and revised standards. This agency

is very strong and has the authority to enforce its standards. As a safeguard, all new state standards must be approved by Congress before they are put into law. Special programs in the near future that this agency will be involved in are a crash survival program, an alcohol counter-measure program, and an experimental safety vehicle program.

**The Federal Railroad Administration**

Some of us may never have been on a train; however, we all need the services of the railroads more than we realize. Railroads carry over 3/4 of all the coal in this country. Over half of our canned and frozen foods, household appliances, automobiles and parts, lumber and wood, chemicals, and paper are all transported by the railroads.

In spite of all this, our railroads are experiencing serious financial difficulties. The Federal Railway Administration (FRA) is looking into the problems that face the railroads now and the problems that will face them in the future. Programs are being developed and research conducted to see if the American people and American industry are interested in keeping our train services.

In addition to determine the future of the railroad, the FRA is in charge of establishing rules and regulations for railroad safety. A round-the-clock safety information and reporting system is conducted by the agency to help keep our railroads safe.

Figures show that there will be an increase in industrial use of railroads in the next few years; however, passenger use is expected to decline. It will require a concentrated effort by the government agency transportation managers to keep the railroads healthy.

As you can see, many jobs are very important for the well-being of every citizen in this country. You can become a part of this by looking into a job in Transportation Management.

**Activity 1** **Do not write on this form.**

**Objective:** I will answer the following questions so that I may check my understanding of the reading.

**Materials:** Questions on Self Check.

**ACTIVITY**

1. The FAA deals with all of the following except _____

   a. preparing comprehensive city demonstration programs
   b. air traffic control and security
   c. landing facility construction and improvement
   d. environmental protection and research

2. Which of the following federal programs relates to the FHWA? _____

   a. National System of Interstate and Defense Highways
   b. Bureau of Motor Carrier Safety
   c. National Highway Traffic Safety Administration
   d. All of the above

3. Passenger and freight trains are now regulated by the _____

   a. New York Central Railroad
   b. Southern Pacific Railroad
   c. Federal Railroad Administration
   d. National Train Commission

4. _____ are the forms of transportation used to carry 75% of all coal, 80% of pulp and paper, and a large percentage of such other bulk and raw materials upon which the average consumer is quite dependent.

66

67

Activity 1 - p. 20

**Materials**

The self-check activity sheet.

**Purpose**

This is a self-check activity. Its purpose is to check on the student's basic recall of some of the reading. Direct the students to their booklet which contains this self-check. Students do not write in the booklet.

**Guidance**

The student answer sheets for this self-check is kept in a separate file. The student should be directed to this file when he completes the self-check.

In addition to checking the answers from the file the teacher may organize the students in Transportation Management into a small group for sharing and comparing answers.

**Modifications or Extensions**

The teacher may, if desired, add to this self-check. For students who may have a specific learning disability or a visual impairment, this self check may be completed orally. It may also be recorded, leaving time for responses, and checked later by the student listening to a correct recording.

5. The number of passenger trains in service in the United States _____

a. will increase
b. declined
c. remained about the same
d. almost doubled from the number in existence since the 1600's.

6. What agency passes on the competence of every pilot?

_____

7. Regulations setting maximum noise limits for the new generation of aircraft is a concern of one of the federal agencies in this MOG. True or False _____

**How will I know I've done it correctly? . . . I will check my answers with the answer sheet.**

**Activity 2** **Do not write on this form.**

**Objective:** I will visit a county airport to see how a federal agency influences local air transportation.

**Materials:** Interview Guide

## ACTIVITY

The purpose of this activity is to see how transportation agencies actually do their jobs and can be accomplished by careful planning with our instructor and other interested classmates. The essential steps are the following:

1. Find material either written or oral, describing what functions are served by county airports and become informed. Go to the library and look under "Aviation", "Air Transportation", "Federal Aviation Administration" for information.
2. Develop a set of questions (no more than ten) that you can use in a fifteen-to-thirty-minute interview of an airport management person.

   Some questions you might ask are

   a. How is this airport financed (where does the money come from)?
   b. How many people are necessary to keep this airport in operation?
   c. Who uses the airport and how much does the airport receive?
   d. What are the duties of the airport manager?
3. Practice using this interview guide. Practice with a friend who is studying this MOG or with your teacher.
4. Make an appointment to visit a local airport and interview someone in management. Your teacher will arrange your visit. If you cannot visit, invite the airport manager to visit you during your class period.
5. Report to the class on what you discovered.

**How will I know I've done it correctly? . . . Turn in a report using part 2 as a guide.**

72

73

Activity 2 - p. 22

**Materials**

Students will need paper, pencil and reference sources as suggested to complete this activity.

**Purpose**

This activity enables students to look at the ways in which one federal transportation agency influences transportation management jobs.

**Guidance**

You will need to plan and prepare for tnis activity well in advance of student participation. In all probability, a group of students will be participating. Preparing for the activity might become a group or committee responsibility with the labor divided among group members. Early in the year you should contact your local airport, explaining your program and making an initial contact with the airport manager. You might set up some tentative dates with him and prepare him for the kind of information that will be of interest to the students. The critical area is, of course, how the FAA influences a local facility.

**Guidance-continued**

Be sure to review each students' interview guide making sure that questions are related to federal agency influence. You might wish to develop a group interview guide with all students participating in this activity.

## TRANSPORTATION MANAGEMENT

### Worker Functions and Duties

In the general area of transportation there are a great number of jobs available. Each major transportation mode requires many support persons to keep the system moving. Many of these jobs fall into another career cluster; clerical workers, mechanical workers, for instance. The available jobs in the specific area of Transportation Management are more dependent upon education and experience. The functions and duties of these workers and these positions are similar in all the job families and are similar to management positions in any career area. Research, Planning, Managing, Change and Evaluating are central duties in management. Transportation overlaps into nearly all public service occupational groups. For example, transportation services for the elderly and handicapped is a new area that is technically a Social and Economic Service.

## TRANSPORTATION MANAGEMENT

### Worker Functions and Duties

Many similar jobs are found in each of the four major transportation systems. This material has brief descriptions of worker's major functions and duties in the Major Occupational Group of Transportation Management. There is a representative sample of jobs and the duties you must perform. There are too many job titles and specific duties to be able to include more than a sample in such a large and complex field.

**WHERE AM I GOING?**

When I have finished this presentation on duties, you will be able to name and describe some basic duties performed by a few specific workers in Transportation Management.

**HOW WILL I GET THERE?**

1. Read the material and information in this section on duties.
2. Use my decision-making ability and my own ideas to solve a simulated transportation problem.
3. Demonstrate an understanding in the transportation field.
4. Design a model city.

**HOW WILL I KNOW . . .**

I will successfully complete the Self Check Activity.

I will complete the simulation exercise.

I will create "Career-O-Grams" and have it read and understood by a fellow student.

I will complete the design and displaying the finished product.

## WORKER FUNCTIONS AND DUTIES

We have looked at the overall picture of Transportation Management, and now you should review some of the specific jobs that are available in the different job families. You might recall the major families are airways, highways, and railroads.

### The Airways

One of the major jobs in providing safety for the airways is that of the AIR TRAFFIC CONTROLLER. These workers give instruction, advice, and information to pilots by radio to avoid collisions and minimize delays as aircraft fly between airports or in the area of airports. When directing traffic, the Air Traffic Controller must consider weather, geography, and amount of traffic, as well as the size, speed, and other specific characteristics of the aircraft. Those who control traffic around airports are known as "airport traffic controllers" and those who guide traffic from one airport to another are called "air-route traffic controllers". They each have different duties.

Stationed at airport control towers, the AIRPORT TRAFFIC CONTROLLER gives the pilots within the vicinity of the airport weather information and take-off and landing instructions such as in which direction to land and at what altitude to fly. They talk continuously to the pilots and are completely responsible for keeping air paths safe.

The AIR-ROUTE TRAFFIC CONTROLLER is stationed at air traffic control centers. There is very little verbal contact with the pilot. Every pilot must file a flight plan with the FAA, and the air-route traffic controller monitors the flight by radar and other electronic equipment to see that the pilot stays on course.

When messages need to be relayed from air traffic control centers to airport control towers, the job of the FLIGHT SERVICE STATION SPECIALIST comes in. These specialists use radio-telephones, radio-telegraphs, and teletype machines in their work. They provide the center for effective communication for the FAA.

AIRPORT DESIGN AND OPERATION WORKERS perform as airport managers, engineers, custodians, fire fighters, and in parking. TRAFFIC ENGINEERS, URBAN PLANNERS, FINANCIAL AND REAL ESTATE SPECIALISTS, CIVIL ENGINEERS, and ENVIRONMENTAL SPECIALISTS are involved in early planning and development of an airport.

Many of the positions mentioned are a part of another MOG; however, their jobs overlap into the airways family.

**Are there jobs available?**

**Air Traffic Controllers**

Additional AIR TRAFFIC CONTROLLERS will be needed because of the anticipated growth in the number of airport towers that will be built to reduce the burden of existing facilities and handle the increased airline traffic.

Because of the expected introduction of an automatic air-traffic-control system and a further decline in the number of control centers, employment of AIR TRAFFIC CONTROLLERS is expected to be light in the long run. A few hundred openings will occur each year for controller jobs because of the need to replace those workers who leave for other work or retire.

Air Traffic controller jobs are chosen by civil service examination. In addition, previous employment in the field or a related field is required. If you do not have the experience, you must score higher on the test and have four years of college or experience in a field that would qualify you for a position of great responsibility. Air traffic controllers must pass stringent physical and psychological examinations. You must have a good memory and a high degree of mental alertness and must be able to make quick, independent decisions. You should be emotionally mature and be able to work independently and in a small room filled with people.

Other than air traffic controlling, most positions with air transportation in the public service area (including ground radio operators, teletypists, and managers) have a poor employment outlook during the decade of the 1970's. Positions should be available in service related occupations at airports.

83

82

## The Highways

A major highway does not just appear and a man with a bulldozer cannot do it by himself. As a matter of fact, many people are involved in the PLANNING AND DESIGN before a highway can even be started. Traffic engineers, transportation planners, and civil engineers are all needed to plan, design, and construct highways. Photographers provide aerial photographs to draftsmen and data processing personnel who lay out the route. Your high school or area vocational technical might offer training in this area. Real estate appraisers and specialists negotiate for property, and public information specialists advise the community of development. As you can see, many jobs are available in the PLANNING AND DESIGN stage and this is only the beginning.

Once a highway is built, someone is responsible for its operation. Transportation agencies keep close watch over operations of the system through traffic counters, traffic records specialists, and road safety specialists. Operations people are responsible for the purchase and maintenance of speical equipment such as snow plows, paving machines, and center-line-striping vehicles, to name just a few. Drivers, equipment operators, mechanics, parts clerks, vehicle dispatchers, data processing personnel, and accountants are a few of the workers involved in OPERATIONS.

TRAFFIC CONTROL provides research on signs, traffic sensors, barriers, computer devices, and other equipment that will help traffic flow smoothly. These research teams include engineers, laboratory technicians, drivers, instrumentation technicians, photographers, and draftsmen.

Public service personnel are also involved in regulation of loads carried on certain highways. These people are in the RATE REGULATION area of highways. Rate auditors, clerks, accountants, road and vehicle safety inspectors, and claims investigators are involved in this work.

Transportation management personnel are involved in the examination and certification of operators to issue driver permits. They investigate accidents to determine causes. These people are usually assigned to the state highway police organization and include vehicle operator examiners, examination center clerks, and accident investigators.

The increase of construction on the HIGHWAYS has resulted in many jobs. Most employees of the Federal Highway Administration are college graduates majoring in business, engineering, or accounting.

Engineers usually enter the highway training program. It is about two years and involves study and work on all phases of highway administration. Trainees may begin with salaries around $10,000 and advance to $15,000 upon completion of training.

Accountants begin in a trainee position and are given on-the-job training. FHWA auditors may be moved from one geographic position to another by the agency employing them. Advancement is based upon performance and professional development.

There is a great demand for Right-of-Way Agents. In this position you begin by serving summones in condemnation cases (to obtain land on which to build), or spend your time searching public records. Under close supervision, you begin obtaining small parcels of land that are needed for highway prospects. With experience you begin negotiating for larger areas of land. Much of the agent's time is spent away from his or her office consulting public records, inspecting property of interviewing owners, or other persons.

The availability of jobs in TRANSPORTATION MANAGEMENT is probably more than you expected. If you are interested, get in touch with the appropriate government agency and find out more about the job you are looking for.

## The Railways

As you might know, you nation's railroads are having financial troubles. Because of the size, complexity, and cost of the changes in railroad systems to meet the demans of industry, the government will become more involved in the running of the railroads. In 1970, the U. S. Government established Amtrack to run passenger trains and to help rail companies save money by eliminating expensive passenger lines. Still, some railroads operate at a loss. The railroads have taken steps to improve their freight hauling capability through the addition of piggyback trains (truck-train transportation) and automobile carrying cars. Railroads hauled 39% of all freight transported in the U. S.

In the DESIGN AND CONSTRUCTION area, positions of passenger service specialists, urban planners, and right-of-way specialists will be available. Public service personnel are operating or directing the operation of a large part of the rail passenger traffic in the United States. Positions in railroad administration and management, as well as all supporting positions, will be available. Another important position is that of TRAFFIC RATE CLERK. This individual answers public inquiries, quotes rates, interprets tariffs, and may help traffic engineers in obtaining, classifying, and compiling data.

**What about those jobs?**

Railroads employ a large number of clerical and administrative personnel. In most ways these jobs are typical of any industry or government agency. They include managers, computer programmers, clerks, data processors, auditors, and salesmen.

The jobs which are unique to railroads include trainmen of various sorts. Among these are the following:

Trainman – This entry level job involves riding in the caboose, manually throwing switches, and signaling the engineer while picking up or dropping off freight cars. It is a well paid job, but applicants must have 20-20 uncorrected vision, normal hearing, normal color perception and be physically strong and able (they X-ray your back and legs to be sure). Hours are long and irregular, and most work is out-of-doors in all sorts of weather. This job use to be separated into brakeman, signalman, or flagman.

Conductor – The senior trainman, the conductor has responsibility for the safe and correct operation of the train.

Fireman – This is the entry level job leading to engineer. Firemen are responsible for the movements of the train.

Rail yards are operated like other freight handing facilities. Switchmen do the jobs of trainmen, but they remain in or near the freight year (they do not travel overnight, work regular hours, and make less money than trainmen.)

These are just a few of the jobs that are available in the Transportation Management MOG. Whether a job is available for you depends upon your qualifications and the need in your area at the time you apply.

88

89

## SUGGESTIONS FOR THE TEACHER

| Activity 1 - p. 29 | |
|---|---|
| **Materials**<br><br>You will need to have copies of the self-check available for student use. The answer sheet should be kept in a readily accessible place so that students can check their answers. | **Purpose**<br><br>This self-check activity is designed to check student recall of some essential facts contained in the reading. |
| **Guidance**<br><br>Students should be able to complete this activity with little or no guidance. You may add to these questions as you wish to fit the interests, abilities, and needs of your students. | **Modifications or Extensions**<br><br>1. Allow students to take the self-check orally.<br><br>2. Record the test on a cassette tape, allowing sufficient time for student response. |

**Activity 1** **Do not write on this form.**

**Objective:** I will answer the following questions to check my understanding of the reading on worker function and duties in Transportation Management.

**Materials:** Self Check questions.

## ACTIVITY

1. Which of the following statements is generally true? _____
   a. Most transportation jobs are low paying
   b. Many public-service jobs in transportation management are similar to transportation jobs in private industry.
   c. Very few public service jobs are in transportation management
   d. Most transportation jobs are very high paying

2. The people who control airplanes in the areas around airports are known as _____
   a. Airport Security police
   b. Flight service specialists
   c. Airport traffic controllers
   d. Air-route traffic controllers

3. Most transportation management jobs are found at the
   a. State level
   b. Federal level
   c. County level
   d. Municipal level

4. Which of the following job areas would not be included in the Highways Job Family? _____
   a. Civil defense
   b. Planning and design
   c. Rate regulation
   d. Driver regulation

92



93

5. Occupations closely connected with airports are

   a. Airport design and operation
   b. Airport planning
   c. Airport Construction
   d. All of the above

6. People responsible for guiding aircraft between airports are known as

   a. Inter-airport coordinators
   b. Intra-airport coordinators
   c. Airport traffic controllers
   d. Air-route traffic controllers

7. Public service personnel sometimes work with the railways as

   a. Operator of private railroad companies
   b. Operators and directors or rail passenger service
   c. Operators of most freight railroad services
   d. All of the above

**How will I know I've done it correctly? . . . I will check my answers with the answer sheet.**

## SUGGESTIONS FOR THE TEACHER

Activity 2 - p. 31

### Materials

The only materials needed for this activity are copies of the activity sheet.

### Purpose

By working through this activity students will have a chance to pull together some thoughts, ideas, and facts they have compiled concerning transportation management.

### Guidance

It will probably be necessary for you to monitor the students as they complete this activity. Students may experience difficulty in beginning this activity and you might need to give them a few starter phrases. This activity can be successfully completed by individual students. Generally, it is best to have two or three students work together in order that the most effective use be made of brainstorming.

### Modifications or Extensions

None suggested

**Activity 2** **Do not write on this form.**

**Objective:** I will complete a problem-solving activity which will help me understand the Transportation Management MOG.

**Materials:** Your own good ideas and this activity page.

## ACTIVITY

The ability to solve problems is a major trait which transportation managers must possess. Imagine that you are a transportation manager for the City of Athens, Georgia. The City has decided to offer public transportation (buses). It is your job to decide on ways to encourage people to use the buses and also to determine the best locations for stops. You don't need to know a lot about transportation to do this activity. Just use your head! Work with a friend if you wish.

1. Write down all the possible problems that might arise in carrying out your job.
2. Which problem is the most serious? Which problem, if solved, would help you solve all the others? _____
3. Brainstorm possible solutions to this problem. List as many possible solutions as you can think of. Do not judge them now. Include wild ideas as well as obvious ones.

   1. _____ 4. _____
   2. _____ 5. _____
   3. _____
4. Look back over your possible solutions. Put a star (*) beside the 5 best solutions. Put a circle around the best possible solution.
5. Why is this the best solution? Write down 3-5 reasons why this solution is best. (Your reasons might include things like least expensive, best quality, etc.).
6. Now, restate the one best idea chosen to solve the original problem, improving it if possible. You may combine two or more solutions into a new one or your best solution may suggest a better one.

**How will I know I've done it correctly? . . . I will let my teacher review my work.**

Activity 3

**Do not write on this form.**

**Objective:** I will study the copy of a Career-O-Gram and then make one of my own by following the instructions in this activity.

**Materials:** Copies of Career-O-Grams, paper, pencils, Vocational Biographies. Vocational Biographies will provide the information necessary to fill the Career-O-Gram form. Also use the D.O.T., Encyclopedia of Careers and Occupational Outlook Handbook.

## ACTIVITY

A Career-O-Gram is an entertaining and eye-catching way of displaying information about a job. A Career-O-Gram is in the form of a telegram. The message part of the telegram gives information about a job in transportation.

1. Study the Sample Career-O-Gram.
2. Choose 3 vocational biographies in Transportation Management. You may use the D.O.T. or other reference book.
3. Using the information in the biography, make up 3 Career-O-Grams.
4. Be sure that you include the following information:
   a. Job requirements (age, education, etc.)
   b. Salary range
   c. Basic duties (planning, driving, etc.)
   d. Something interesting or exciting about the job.

Activity 3 - p. 33

**Materials**

Be sure that you have plenty of blank paper on hand for this activity. You might want to get some telegram forms from Western Union. Students will also need to refer to Vocational Biographies, The Dictionary of Occupational Titles, the Encyclopedia of Careers, and the Occupational Outlook Handbook.

**Purpose**

The Career-O-Gram is an entertaining way of pulling together essential pieces of information for a specific purpose.

**Guidance**

Most students are able to work independently on this activity. You will need to monitor student work to make sure that their Career-O-Gram are not copies of the sample with only the specific information changed. Check also to make sure that the items under part four in the instructions are included in each Career-O-Gram.

**Modifications or Extensions**

1. Allow two or three students to work together on this activity. Be sure that at least one of the students is able to carry out this activity and can serve as a peer model for the others.

CAREER–O–GRAM (sample)

**TO:** Tom Smith, South Side High School, APPS Program

**FROM:** Ray Davis – Bay Area Rail Company
Personnel Manager
302½ Howell Avenue
Fresno, California
938-372-1237

**MESSAGE:** The Bay Area Rail Company is looking for you! – IF –

1. You are between the ages of 21 and 39.
2. You have a four-year college degree in accounting, business administration, or a similar field.
3. You would like to make between $10,000 and $13,000 per year.
4. You enjoy some outside work.
5. You think you would like to be in on the ground floor of the development of a city – county transportation system.

**How will I know I've done it correctly? . . . Handing the Career-O-Gram to other students in the transportation MOG who will be asked to check for completeness of information. The student who checks it will be asked to put his name on the bottom just like a real telegram.**

Activity 3

**Do not write on this form.**

**Objective:** I will visit sites at which the MOG being studied can be observed.

**Materials:** Field trip questions, field trip evaluation form.

## ACTIVITY

This activity is in two parts. Part 1 – The "Field Trip Questions" form is to be completed before you go on the field trip planned for this MOG. Part 2 – The "Field Trip Evaluation" form is to be completed after you return from the trip.

1. Fill out the "Field Trip Questions" form.
2. Your teacher will check your form. This will help in planning the trip so that all of the students can see some things of interest.
3. After the trip, fill out the "Field Trip Evaluation" form.

**How will I know I've done it correctly? . . . I will turn in the field trip forms to my teacher.**

106

107

| Activity 3 - p. 34 | |
|---|---|
| **Materials**<br><br>You will need enough copies of each set of field trip questions for each student participating in a field trip. | **Purpose**<br><br>The field trip questions are included to help the teacher select field trips which will best meet the needs of the student participating. The questions also help the student organize his own thoughts concerning things he would like to see on a particular field trip. The field trip evaluation questions provide the teacher with feed-back concerning the students' view of the value of a trip. Additionally, the evaluation questions enable the student to correlate work, work-site and worker observation. |
| **Guidance**<br><br>Encourage the students to answer all questions as openly as possible. Explain the purposes of these questions to the students. | **Modifications or Extensions**<br><br>None suggested |

## FIELD TRIP QUESTIONS

1. Place to be visited _____

2. I would like to see the following jobs

_____ _____

_____ _____

_____ _____

3. I would like to talk to the following types of workers

_____ _____ _____

4. I would like to know the following about:

Salary _____

Working Conditions (where workers work) _____

Hours _____

Educational Requirements _____

Skills needed _____

Equipment used (if any) _____

Job mobility (advancement) _____

Things I can do now to prepare for this job _____

What the workers actually do _____

## FIELD TRIP EVALUATION

Name _____

Date of Trip _____ Place _____

Special job observed _____

MOG being studied _____

1. In general, did you enjoy the visit? Yes _____ No _____
   If no, explain briefly _____

2. Did the trip help you better understand the Major Occupational Group which you are studying? Yes __ No__
   Why _____

3. a. What jobs in the Major Occupational Group did you see being performed?

   b. Which of these jobs, if any, would you like to have?

   c. What did you find out about the requirements for jobs in the MOG?

   d. What did you find out about the kind of work (duties and type of work) done by people in this MOG?

4. Additional comments about this trip. _____

5. Write a two paragraph description of a typical day of a worker.

**Objective:** I will design a transportation system for a new city to demonstrate some things I have learned in this MOG.

**Materials:** Paper and pencil and this activity sheet. You may use a large piece of poster board if you wish.

## ACTIVITY

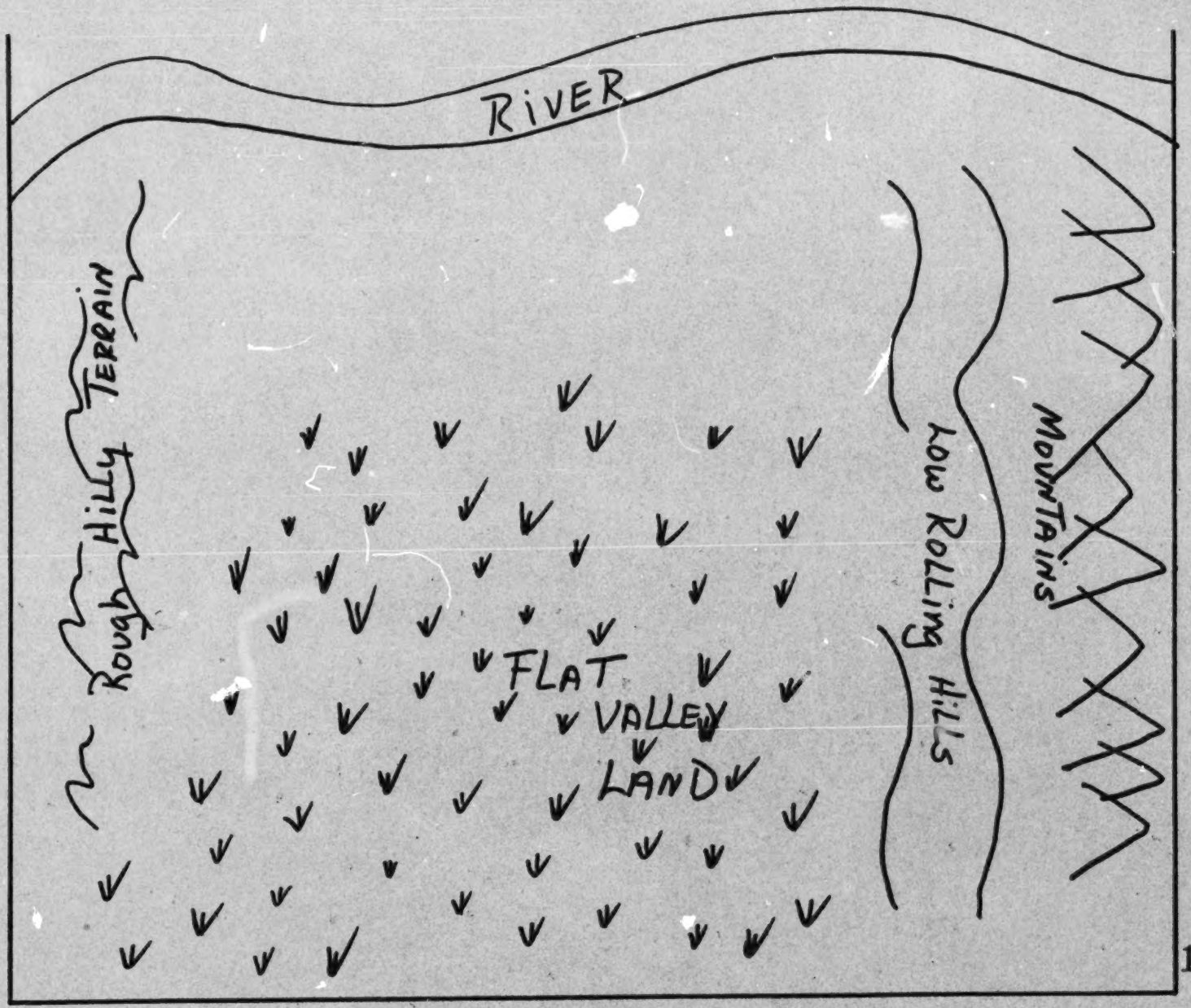
You are now going to have a chance to let your imagination and your knowledge of transportation combine to design a modern transportation system.

A new city is being built. This city will include schools, home, apartments, hospitals, parks, businesses, and industry. The city is located 100 miles from the ocean. The population of this city will be about 75,000.

The city manager has decided that there will be no automobile traffic in the downtown area so you will need to consider "people movers" such as overhead electric rails and moving walkways. You must also consider ways in which railroads, airlines, and highway vehicles can be used together to move people and goods. How will you locate homes, schools, shops, parks, etc. so that the most people can get to them without driving too many cars? Where would you locate businesses? Industry? Draw your city as best you can. On another sheet of paper explain your city. Write a description of your drawing.

Use the enclosed city layout to help you design your system. This is just a sample.

**How will I know I've done it correctly? . . . I will let my classmates and my teacher look at my city and read my descriptions.**


RIVER
ROUGH HILLY TERRAIN
FLAT VALLEY LAND
LOW ROLLING HILLS
MOUNTAINS

116

117

TRANSPORTATION MANAGEMENT

Answer Key

Self Check -- p. 5

1. Transportation Management is a growing career field because as the population demands more goods and services more means of transportation will be necessary to bring things to people. We no longer depend on local products to supply our needs. Imports from other countries increase to place transportation demands on our country.

2. It is necessary to have persons employed to manage transportation because qualified persons must be responsible for the planning, organizing, and implementing of such functions as highway construction, railway development, airway monitoring and product transportation. We are a nation on the move and transportation managers must plan for highway construction and other means of public transportation.

3. A transportation manager in Lawrenceville might work with the planning commission to develop a system of streets in a new housing development. The manager might plan the repair and improvement of county roads. It might be the manager's job to purchase highway equipment.

Activity 3 -- p. 7

1. Climate and Weather:

| | Problem | Solution |
|---|---|---|
| a. | frozen ground | power tools to break ice cover |
| b. | iceberg | radar |

Activity 3 -- p. 7 -- continued

1. Climate and Weather:

| | Problem | Solution |
|---|---|---|
| c. | storms | weather stations, radar |
| d. | heat | improved technology to develop stronger materials resistant to heat. |

2. Distance and Geography:

| | Problem | Solution |
|---|---|---|
| a. | mountains | cut through and around |
| b. | rivers | bridges |
| c. | long distances | haul most profitable crops. |

3. Public Transportation:

| | Problem | Solution |
|---|---|---|
| a. | poor, inadequate streets | street improvement to handle vehicles |
| b. | parking | creation of useful and efficient parking |
| c. | congestion | improved traffic routes and patterns |

4. Transportation and the Environment:

| | Problem | Solution |
|---|---|---|
| a. | automobile pollution | Anti-pollution devices. Reduce number of cars in congested areas. |
| b. | oil spills | Development of stronger, safer tankers |
| c. | noise | Technological developments to reduce noise levels |
| d. | take over of open land by highways | Study environment and develop ways to protect wildlife. Construct barriers to protect communities. (Barriers would be of natural materials such as trees). |

5. Fuel:

| | Problem | Solution |
|---|---|---|
| a. | dependence on foreign imports | Develop economical domestic supplies |
| b. | shortages | Alternative energy sources such as solar and nuclear energy. Ration use of scarce forms and develop others for safe and clean use. |
| c. | over use | Incentives to cut back |

6. Safety:

| | Problem | Solution |
|---|---|---|
| a. | death and injury | Safety devices and lower speed limits. |

Self Check -- p. 20

1. a
2. b
3. c
4. Railroads
5. b
6. FAA
7. True

Self Check -- p. 29

1. b
2. d
3. a
4. a
5. d
6. c
7. d